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ABSTRACT

As the technology of the workplace changes, U.S. workers are called upon to have increasingly high workplace literacy skills in order to remain competitive. These skills encompass more than academic skills of reading and arithmetic; they involve complex applications of reasoning and problem-solving skills. In order to meet the need for workers with such skills, businesses often provide workplace literacy training programs. Such programs must be evaluated to see how well they are carrying out their mission and how they can be changed to meet the needs of employers and employees. Evaluation methods vary as the outcome sought varies. Companies generally evaluate training on four levels that measure: (1) to what extent the training meets organizational needs; (2) how well the employees master the content of the program; (3) how mastery of training transfers to, and has a positive impact on, job performance; and (4) to what extent changed job performance results in cost benefit to the organization. Evaluation criteria can be formulated based on these four levels of employer needs. Whatever type of program evaluation is used, it is critical that the data provide evidence that the program is or is not effective, based on the values of the organization. A true measure of program success is the willingness of the organization to expand it. (Contains 21 references.) (KC)



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# How Do You Know If It's Working?

# Evaluating the Effectiveness of Workplace Literacy Programs

by

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# How Do You Know If It's Working?

## Evaluating the Effectiveness of Workplace Literacy Programs

Workplace literacy programs often are perceived as a potential means for upgrading the skills of the labor force in order to maintain a competitive role for Americans in a global economy. As a wide range of replicable workplace literacy program models emerges to fit the various needs of diverse partnerships and conditions, employer and employee requests for information about such programs continue to increase. No one, however, wants to buy a "pig in a poke;" prior to investing time or money, employees and employers alike want to know what causes programs to be effective and which programs have proven to be most successful.

In the workplace, literacy programs are viewed as components of "training," usually conducted under the direction of personnel or human resource development departments. As a function of training, workplace literacy programs need to be evaluated differently from other adult education programs. This is because training, by definition, is provided in response to organizational needs as well as those of the individual; education is a response to individual needs alone. Any effective training program, e.g., a workplace literacy program, demonstrates positive impact both on organizational needs and on those of individual participants. Workplace literacy programs stem from the desire for joint survival by both employees and the organizations for which they work (Fields, 1986). Even those workplace literacy programs now sponsored by labor organizations have expanded beyond adult basic education courses and tuition reimbursement plans as a direct result of member requests for augmentation of company training in new job requirements (Philippi, 1992). In order to understand why literacy in the workplace is considered "training," rather than "education," it is important to examine the underlying reasons for the existence of this new field.

### Why Literacy Programs Are in the Workplace

Today's economy and workplace environment are changing rapidly, accelerating the need for workers to use literacy skills as they perform job tasks. The shifts toward self-directed teamwork and emphases on quality production and services necessary for competing in a global marketplace have created job tasks that employ numerous

applications of literacy skills. Both large and small companies are requiring many new job tasks of their employees in efforts to remain in business and to leapfrog their competitors.

Changes now taking place in the workplace center around improvements in product and service quality and increased worker responsibility. Most companies attempt to make processes more efficient and profitable through:

- shifts in responsibility, such as downsizing, cross-training with accompanying certification processes, and self-directed work teams;
- upgrades in technically sophisticated equipment, such as computer terminals, robotics and program logic controlled machinery; and,
- collection and analysis of product and service quality statistics to measure customer satisfaction, cycle time and consistency.

The motivation for all of these efforts is an organization's bottom line-- and many companies are "running scared." Risking survival on a new piece of equipment or a shift in organizational structure causes more and more companies concern as they operate with leaner staff resources, greater demands from customers and tighter timelines. Organizations are increasingly uncertain of the capacity of their current workforce and prospective new hires to master the skills necessary to accomplish these critical changes. In many cases, organizations must rely on a workforce that includes incumbent employees who ranked low academically in school or who have limited proficiency in English.

Many of the countries with which America competes in the Asian and European economic communities have been able to begin afresh as they rebuild new economic systems after obliteration caused by war. In contrast, America is trying to transition from outdated hierarchical work systems to quality-oriented, flattened organizations without a hiatus resulting from the economic collapse of our existing system. The enormity of this task, currently faced by American employers and employees, has been compared to that of an electrician trying to "rewire the house while the lights are still on." Because of the necessity to remain an aggressive player in a global marketplace during the reskilling of our labor force, the workplace has become a vast learning community with immediate and critical needs.

To accomplish new workplace tasks effectively and to improve current job performance, employers have begun to realize the necessity for providing workers with training in job literacy skills. Most employees also feel the need for, and often ask for a "brush up" or special training to prepare themselves to assume control of their work environment. The average worker is almost 40 years old. For years he has performed the same job tasks, but as his job responsibilities change with upgrades in technology and shifts in management structure, he finds himself no longer equipped with the skills he needs to tackle new job tasks. He is classified as an "intermediate level literate," no longer able to function competently in a changing workplace environment without additional literacy skills training.

Traditional educational systems in communities are designed to meet the needs of individuals, not organizations. For that reason, the specific needs of workers and organizations are being met with workplace literacy programs that enable participants to transfer job-linked literacy skill applications to the performance of their job tasks.

## The Relationship between Training in Literacy Skills and Performance of Job Tasks

For every job there are tasks that are critical to its performance. The varying degrees to which workers can perform these critical tasks determine their levels of job proficiency and, collectively, determine the quality of the organization and of the labor force. Competent performance of job tasks requires more than knowledge of job content. Superior workers are those who are able to identify job needs and efficiently use basic skills applications, (i.e., reading, writing, speaking, listening, computation, problem solving), to complete job tasks (Mikulecky, 1987). These skill applications are known as "workplace literacy."

Workplace literacy tasks require different applications of skills from those taught and used in academic contexts. Competent workers must now be able to use:

1.), job reading processes for locating information and for using higher level thinking strategies to draw conclusions from multiple sources in order to problem solve;

> 2.), occupational speaking and writing processes for organizing clear communication of ideas and for mastering those thinking skills that enable clarification, analysis, elaboration and extension of spoken or written information; and,
>
> 3.), workplace applications of mathematical concepts and processes for calculating information, collecting data and solving problems that go beyond basic number concepts and computation skill drill and enable workers to acquire proficiency levels in reasoning and interpretation. (Philippi, 1987-88)

These workplace skill applications all require the use of cognitive strategies and are seldom used in isolation, but generally cluster in combinations related to the performance of specific job tasks.

Even those workers who have mastered academic literacy skills are seldom prepared for the ways they will need to use those skills to competently perform the current and future job tasks in which these embedded skills are found in the workplace. To solve this problem, many employers and labor organizations have begun to offer literacy skills training programs to supplement technical training on new job tasks. The most successful of these are programs that are designed to facilitate maximum transfer from the learning situation to job performance. These are programs that are built on actual job scenarios and that utilize job materials as a vehicle to teach the metacognitive and cognitive strategies that competent workers use. Instructional objectives are not content-specific, but rather focus on the thinking processes that are embedded in real-life job task examples with which workers are familiar. Using this type of functionally contextual instructional material in workplace literacy training is important to both the organization and to individual participants. For the organization, the processing performed in instruction and in the tasks to which learning is to be transferred is very similar; similarity must be high in order to achieve subsequent retrieval and application of knowledge; if the processes are different, procedures learned in training yield no transfer, or even negative transfer (Bransford and Franks, 1976; Tulving and Thompson, 1973). For the individual, it ensures that the instruction will be meaningful in terms of prior knowledge structures; using existing "mental hooks," or schemata, derived from work environment and experience to attach new

information helps ease the process of assimilating old and new knowledge (Farr, Carey and Tone, 1985; Fingeret, 1984; Shoemaker, 1967; Valentine, 1985).

## The Purposes of Program Evaluation

Evaluation is generally thought to be the concluding step in a series of program components, the completion of a training cycle. It is often described as a summation, in terms of "outcomes," and is frequently viewed as a somewhat frivolous program after-thought or a small but necessary requirement fulfilled in order to remain in compliance with regulations of external funding sources. In reality, evaluation is an integral part of any program design; it dictates and monitors data collection to determine summative cyclical.outcomes as they relate to an ongoing formative program process. Properly carried out, the process of program evaluation should provide information that improves the effectiveness of program design, development, implementation, and operation (Sticht, 1991). It should also provide hard data that identifies indicators of program effectiveness, measures change in terms of those indicators, and works toward establishing program standards from the results (Condelli, 1992).

Evaluation can serve a number of purposes. Five main categories are described by Bramley in Evaluating Training Effectiveness: Translating Theory into Practice, (1991, pp. 85-108). Bramley suggests that evaluation is used most commonly as a means for providing feedback that enables quality control over the design and delivery of program activities. Feedback to participants is an essential part of the learning process. Feedback to providers and instructors helps developers make appropriate modifications to current and planned future offerings. Evaluation feedback provides a means for clarifying program goals and objectives, observing whether or not they have been achieved, and producing information that can be used by program decision makers to improve a program's capacity to achieve its goals.

Another purpose for evaluation is to develop policy and practice criteria, as they relate to a program sponsor's goals. This form of evaluation is called "control evaluation" and attempts to measure program worth and cost to the sponsor through comparative studies of different combinations of methods for attacking specified problems. Evaluation conducted for the purpose of control extends beyond feedback, posing comparative questions, and tends to result in reports containing many recommendations.

On a slightly more formal level, research evaluation can be conducted to draw more universal conclusions from data. When evaluation is designed as research, its purpose is to add knowledge of principles and practice to general application in the field. Research evaluation attempts to draw specific conclusions from a carefully controlled situation (internal validity) and determine the extent to which those conclusions apply to other situations (external validity).

Yet another purpose of evaluation is intervention. Involving program participants, sponsors and providers, i.e., the "stakeholders," in goal setting, data collection and debriefing can redefine the sharing of program responsibility for learning. This is a powerful method of intervening in an organization's procedures when change in the way things are done is the desired outcome.

Finally, evaluation can be used as power. Evaluation information is potentially powerful in a political way within an organization or for the group sponsoring a program. It is next to impossible to avoid the use of an evaluation in this way; however, it does underscore the responsibility of any evaluator to ensure that the information being used is based on a thorough and careful study, rather than reports based on anecdotal evidence alone (Randall, 1960).

U.S. federal and state governments fund numerous demonstration projects each year in attempts to identify those workplace literacy program components and models that provide effective solutions to this national problem. The published purpose of the national Workplace Literacy Program grants is "to increase the productivity of the workforce through the improvement of literacy skills in the workplace" (Federal Register, 1989). Private, public and military organizations also fund numerous workplace literacy programs for similar reasons. Feedback evaluation is important to providers, business and labor partners, and participants involved in each of these endeavors throughout the life of their projects. Evaluators both internal and external to these projects can gather and analyze data that demonstrates appropriateness of goals and outcomes, along with levels of effectiveness for program design, development, implementation and process. Comparing evaluation reports and information among projects could result in recommendations that establish policy and practice controls for future projects. Creating project designs that operate in carefully controlled situations could result in research findings that add knowledge of

principles and practices to general application in the field. Participation in evaluation by all stakeholders in projects could lead to positive intervention in existing education and training procedures; and, responsible evaluations that collect hard data could produce positive, rather than negative, conclusions about the value of workplace literacy.

## Defining Evaluation

Much of the underlying theory that exists in the modern field of evaluation has evolved from the practices used in educational evaluation in the United States. In the 1930s, strong emphasis was placed on the need for objectives by which to organize school curricula (Tyler, 1932; 1950). Objectives became the basis for planning and guiding instruction, for preparing test and assessment procedures, and for systematic program evaluation. This led to the comparison of programs and the development of standards by which all educational programs were measured across the country.

In the 1960s, it became apparent that the development of new curricula would need a new type of evaluation that provided feedback to program developers during the development period (Cronbach, 1963; Scriven, 1967). From this era came the terms "formative evaluation," concerned with program development, and "summative evaluation," concerned with program worth. This distinction allowed for program evaluation that focused on the performance characteristics of an individual developing program, rather than on comparison with others. Evaluation of workplace literacy programs should emphasize formative evaluation while including cyclical summative evaluations ( based on the premise that the workplace will continue to experience accelerating change and training in new skill applications will be an ongoing need). Evaluation of workplace literacy programs needs to measure program effectiveness independently, i.e., by comparing each actual program to its own stated goals, rather than comparing it to other programs. This is because each workplace literacy program designed in response to company and worker needs is unique; no two organizations have exactly the same set of critical job tasks to be addressed by instruction.

By the mid 1970s, a new version of independent program evaluation had developed, called "responsive evaluation" in which the evaluator is primarily concerned with program effects in relation to the interests and goals of the program "stakeholders" (Stake, 1975). Responsive evaluation begins by identifying the goals each stakeholder

group has for the program. This is followed by evaluator observations of program materials and implementation, which are compared to the various goal expressions. The evaluator identifies issues and concerns, collecting data to satisfy these with a variety of instruments. Collected information is organized into themes and issues and concerns are matched to audiences. "Progressive focussing" can be used to systematically reduce the breadth of inquiry and concentrate attention on emerging issues (Parlett and Hamilton, 1977). Responsive evaluation has potentially strong features for evaluating workplace literacy training because it attempts to take into account the interests of various groups of stakeholders, rather than just the program developers or sponsors, and collect data that meets their needs.

If the end goal of workplace literacy is to improve the productivity of the workforce, programs should be viewed as an integral part of organizational training-- a long-term investment in the building of a highly skilled labor force. Evaluation design, as a part of such programs, needs to determine program effectiveness according to the value yardsticks that business and industry apply to training. Quality indicators, measures and performance standards for individual programs need to be identified from the workplace community, rather than from educational environments.

Whenever companies evaluate training, they generally assess effectiveness on four different levels:

Level I- To what extent does the proposed training program match a critical organizational training need?

Level II- To what extent do employees who participate in the training master the content of the program?

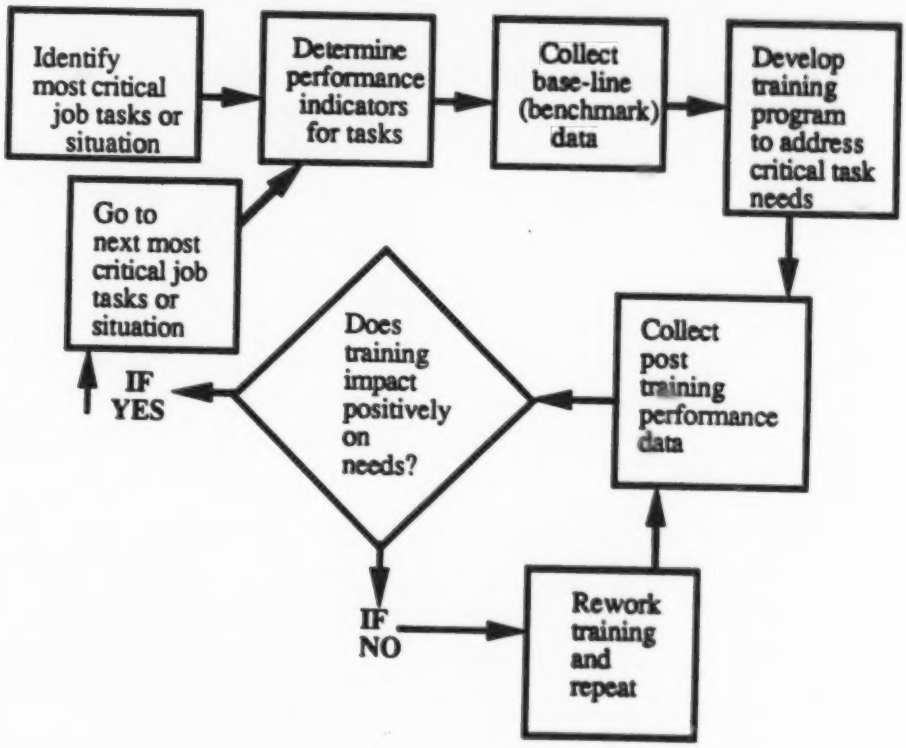
Level III- To what extent does mastery of training transfer and impact positively on job performance?

Level IV- To what extent does changed job performance result in cost benefit to the organization?

These evaluation levels differ significantly from traditional education evaluation criteria. Much of evaluation of educational programs focuses on individual progress toward universally defined standards, i.e., grade levels or letter grades, which sometimes is then compared to group achievement. In addition, feedback from individual participants and instructors is sometimes solicited on a structured basis to determine the need for adjustments to materials, scheduling or instructional techniques.

The relationship between training and evaluation is illustrated in Figure 1 below:

**Figure 1: Training/Evaluation Relationship**


Identify most critical job tasks or situation
Determine performance indicators for tasks
Collect base-line (benchmark) data
Develop training program to address critical task needs
Go to next most critical job tasks or situation
Does training impact positively on needs?
IF YES
Collect post training performance data
IF NO
Rework training and repeat

## Evaluation Strategies

When educators enter the workplace as providers of workplace literacy programs, it is important to conduct evaluation that provides meaningful information based on the existing values of the workplace community. Level I evaluation criteria for a workplace literacy program can be effectively met when internal or external program providers:

- work with employers and employees to determine organizationally critical job tasks and program goals;
- identify the skill applications needed to perform those tasks competently;
- develop a program that instructs in those skill applications through the use of job scenarios and materials as the vehicle for instruction; and
- collect pre- and postprogram data on employee expectations and satisfaction with program content and delivery.

Level II evaluation criteria can be effectively met when program providers:

- collect representative examples of participants' work to demonstrate progress toward program instructional goals; and
- develop and administer competency-based, parallel pretests and posttests correlated with program goals and content to determine progress of participants toward mastery of instructional content.

Level III evaluation criteria can be effectively met when program providers:

- identify local indicators for measuring performance of specific behaviors on critical job tasks; and
- collect ratings of performance, either by participants' supervisors or as employee self-ratings, on identified indicators pre- and post-program course cycles to measure the amount of transfer from training to job performance.

Level IV evaluation criteria can be effectively met when employers and employees:

- employers and employees examine areas in which critical job tasks are performed to determine the extent to which changes in performance after participation in workplace literacy training programs are saving or generating money for the organization.

Most organizations use basic measurement of work output to meet product (or service) goals, emphasizing quality, quantity, variety, uniqueness of whatever is being produced or provided. Some common indicators that are measured include units produced, defects or failure rates, tasks completed, rework, scrap, backlogs, units sold, shortages, accidents, etc. There are also system goals which emphasize growth, profits, modes of functioning, and return on investment. Frequently used criteria are: productivity,

processing time, operating costs, efficiency, amounts of overtime or lost time, machine downtime, performance/cost ratio, etc. In addition, "hygiene" benefits like reduced turnover, absenteeism, strikes, etc., and reduction in accidents are also used to conduct cost benefit or cost effectiveness analyses. (Cascio, 1982; Kearsley, 1982). When data is already being collected for such measures, employers and employees may wish to examine it to identify relationships with positive changes in performance. Measures of individual productivity are easiest to correlate, but it is difficult to isolate training impact from other variables that may be producing a cost benefit. Additionally, benefits can be rather diffuse and often take considerable time to be realized, which makes cost analysis somewhat inappropriate as a tool for evaluating training and development activities (Bramley, 1991).

It also is quite difficult for external workplace literacy program providers to be permitted access to an organization's profit and loss or quality figures because of the privileged and secure status of such information. For this reason, most providers are well advised to encourage program evaluations through which they can establish Level III indicators that demonstrate the amount of transfer of learning to positive impact on performance, and leave cost benefit analysis that utilizes the information gathered to appropriate internal organizational staff.

A means for costing changes in the workplace due to training can be found in the process of evaluating the value added to employees. The value-added approach assumes that there is a need for certain skills in areas relevant to the work performed, that there is motivation to do the job, and that there is an opportunity for the skills to be used to perform the job. Pre-training analysis must be conducted to estimate the position of individual targeted participants with respect to various levels of skill and motivation of typical employees who are doing that kind of work. If employees are thought to have the motivation but lack some important skills, then the investment should be on employee skills training. Post program measures of skills and motivation are also collected and changes calculated. Assuming that supervisors or managers can accurately rate their employees, that there is opportunity and encouragement to use the new skills, and that the skills required for successful job performance have been accurately identified and are being taught in training, value-added evaluation can be used to estimate the return on training investment. Unlike cost benefit analysis which summarizes all outcomes in monetary terms and omits those things that cannot be expressed in dollars, the value-added process

describes outcomes in their own terms and then concludes that these do or do not imply significant increase in skills or motivation (Bramley, 1991, pg.84).

Whatever strategies are used to evaluate workplace literacy programs, it is critical that the data gathered and analyzed provides evidence that the program is or is not effective, based on the values of the organization. For many programs the time line for proving success is limited to one or two financial quarters. Companies are operating on lean budgets and are unable to justify training expenditures that do not demonstrate return on investment-- minimally to Level III evaluation criteria, impact on performance. Without this kind of hard evidence that a workplace literacy program has a relationship to the bottom line of the organization, the program retains the status of a charitable effort. Organizations sponsor workplace literacy programs for many reasons, ranging on a continuum from good works to improving public images to generating negotiable benefits to desire for job - performance improvements that address government regulations or impact on competition and survival. In lean times, programs that are perceived as charity are discontinued.

The true measure of program success is continuation and expansion through organizationally budgeted resources. For company-provided programs this entails constant searching for evidence each quarter that demonstrates the value of continuing the training program and looking for resources with which to expand it. For external providers or recipients of demonstration project funds, this requires diligent efforts to develop meaningful workplace program indicators that demonstrate invaluable impact on the organization as well as individual participants so that the program will be institutionalized, budgeted, and incorporated into company training on an ongoing basis.

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